Claims

[c1] 1.A method for automatically analyzing an article of manufacture comprising:

a)providing a master model and a context model specification;

b)creating a context model from said master model and said context model specification;

c)translating said context model into an engineering analysis model compatible with an engineering analysis program;

d)executing said engineering analysis program to generate a performance estimate from said engineering analysis model; and

e)optionally modifying said master model to improve said performance estimate.

[c2] 2.The method of claim 1, wherein said step of creating a context model comprises creating an associative copy from said master model.

[c3] 3.The method of claim 1, wherein said step of creating a context model further comprises chunking.

[c4] 4.The method of claim 1, wherein said step of creating a context model further comprises trimming.

[c5] 5.The method of claim 1, wherein said step of creating a context model further comprises tagging.

[c6] 6.The method of claim 1, wherein the step of translating said context model into an engineering analysis model comprises generating at least one macro file.

[c7] 7.The method of claim 1, wherein the step of modifying said master model to improve said performance estimate comprises using a finite element method.

[c8] 8.The method of claim 1, wherein the step of modifying said master model to improve said performance estimate comprises using a finite difference method.

[c9] 9.The method of claim 1, wherein said master model represents a compressor spool.

[c10] 10.The method of claim 9, wherein said compressor spool comprises multiple disks and adjacent rotating hardware.

[c11] 11.A method for automatically analyzing a turbine engine disk comprising:

a)loading a turbine disk CAD model from a database;

b)acquiring a geometric description of a region of interest from an user;

c)creating a context model from said geometric description and said CAD model by trimming, tagging and chunking;

d)generating a mesh from said context model;

e)executing and engineering analysis program using said mesh to generate a performance estimate;

f)optionally modifying said turbine disk CAD model to improve said performance estimate.

[c12] 12.The method of claim 11, wherein said step of creating a context model comprises creating an associative copy from said master model.

[c13] 13.The method of claim 11, wherein said step of creating a context model further comprises chunking.

[c14] 14.The method of claim 11, wherein said step of creating a context model further comprises trimming.

[c15] 15.The method of claim 11, wherein said step of creating a context model further comprises tagging.

[c16] 16.The method of claim 11, wherein the step of translating said context model into an engineering analysis model comprises generating at least one macro file.

[c17] 17.The method of claim 11, wherein the step of modifying said master model to improve said performance estimate comprises using a finite element method.

[c18] 18.The method of claim 11, wherein the step of modifying said master model to improve said performance estimate comprises using a finite difference method.

[c19] 19.The method of claim 11, wherein said master model represents a compressor spool.

[c20] 20.The method of claim 19, wherein said compressor spool comprises multiple disks and adjacent rotating hardware.